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Company's Silence Countered Safety Fears About Asbestos

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**BODY:**

When asbestos was labeled a killer 30 years ago, one company moved to cash in.

W. R. Grace and other chemical makers had long been adding asbestos to their fireproofing sprays, because the silky-white fibers helped insulate steel. But as competitors ceased production on the news that those fibers could lodge in the lungs and cause cancer, Grace reported a "research breakthrough." Grace said it had devised a "completely asbestos-free" fireproofing spray. "The health and environmental aspects," its news release announced, "are overpowering."

The financial aspects were certainly impressive. Before long, W. R. Grace & Company went from minor player to giant in the fireproofing business. For nearly two decades, the new formula was sprayed onto the skeletons of office buildings, schools and hotels across America.

Only one thing: Grace's new product was not completely asbestos-free. A little-known kind of asbestos, tremolite, laced the ore used in the spray. And while Grace knew this, for years it kept that knowledge largely hidden from workers who applied the fireproofing and clients who wanted their buildings asbestos-free, according to confidential company documents obtained by The New York Times.

This is not a replay of the familiar asbestos story, in which vast quantities of a "miracle product" were used to insulate a generation of buildings, only to be unmasked as a carcinogenic catastrophe. The story of Grace's fireproofing, with the brand name Monokote, is far more ambiguous, raising questions about how a corporation should act when there is deep concern, but no scientific certainty, about a product's safety.

Much less asbestos made its way into Grace's new spray than into its old product -- less

than 1 percent, compared with 12 percent, the company says. To Grace, the contamination was insignificant -- like "gold in sea water," one former company official said. But many government scientists feared that asbestos might be unsafe at any level. Even small amounts like those in Monokote, they argued, should be outlawed.

Against that backdrop -- and just when environmental awareness was becoming a potent force in public opinion -- Grace pursued a strategy of silence. From 1970 until the late 1980's, even as it fought a series of other environmental battles, Grace maneuvered to keep its fireproofing business alive in the face of stiffening regulations and rising health concerns, internal company documents and interviews with current and former employees show.

When the fledgling Environmental Protection Agency proposed an outright asbestos ban in the early 1970's, Grace successfully lobbied for a threshold just high enough to keep Monokote on the market. When workplace-safety officials proposed limits that Monokote could not meet, Grace's arguments helped delay them for years. Then, Grace used Monokote's legality to justify calling it asbestos-free.

Grace declared bankruptcy in April, citing the costs of lawsuits involving products other than the new Monokote.

The company was brought to the brink of disclosing the asbestos content of Monokote more than two decades ago, in 1977. With builders and architects hearing ever-louder rumors of "a tremolite problem," Grace officials met secretly at company offices in Cambridge, Mass. There, documents show, they weighed the risks and stayed the course. While silence increased the danger of being sued, they calculated, disclosure could have meant the end of Monokote. So, they decided, customers who inquired if Monokote contained asbestos were to be told that it did not.

Over the years, documents show, Grace gave that answer in a variety of ways that stopped just short of absolute denial. Sometimes it said Monokote could "be used as a non-asbestos containing fireproofing material" and said laboratory tests had found no asbestos; other times, it said the amounts that were detected posed "no unreasonable health risk." But however Grace turned it, the message was the same: Monokote was effectively asbestos-free.

In the silence, workers using the reformulated Monokote say they stopped wearing the cumbersome respirators designed to block asbestos fibers. "With the asbestos-free, we wore paper masks," said Harry D. Starratt, a retired sprayer from Andover, Mass. "There was never supposed to be harm in it."

Even now, experts say, workers demolishing buildings fireproofed with the new Monokote typically would not use respirators, though their exposure is probably considerably lower than that of the workers who applied it.

Scientifically, the jury is still out. As with many carcinogens -- including arsenic in

drinking water, the subject of renewed debate in Washington -- any danger from exposure to low levels of asbestos has neither been proved nor disproved.

Even so, there has been a growing belief among scientists that any amount poses a risk, and gradually, the government's labor-safety agency has lowered exposure limits. By current rules, Monokote at times would have shed triple the number of asbestos fibers allowed, according to Grace's records.

That level, federal researchers estimate, translates into more than 10 deaths for each 1,000 laborers who used the spray daily over their working careers. While as many as 40 people could have been exposed to the asbestos at any of tens of thousands of construction projects, those most at risk were the dozen or so who mixed and applied the spray. (The danger is minuscule for people who merely work in buildings containing the spray, scientists say.)

"A single exposure to a product that contains less than 1 percent may not necessarily cause a problem," said Dr. L. Christine Oliver, assistant clinical professor of medicine at Harvard Medical School, who has testified in lawsuits against asbestos companies. "But if these exposures continue over time, and they probably will if the individuals aren't warned that they contained asbestos, then there is a risk."

Grace defends the two versions of reformulated Monokote it sold in the 1970's and 1980's. The company says that it fully informed regulators of the contamination, and that the asbestos content always remained within legal limits. As for the workers who applied Monokote, the company argues that their cumulative exposure was not great enough to pose a danger. In the late 1980's, the company stopped using the tainted ore and produced a new Monokote that was truly asbestos-free.

"They were safe when they were manufactured and applied and remain safe today," a lawyer for the company, Thomas D. Yannucci, said of the previous Monokote versions. Grace, he added, "has never misrepresented the asbestos content."

While the Monokote story is just now coming to light, other Grace products containing tremolite have already become the focus of public concern. Homeowners have accused the company of covering up dangerous levels of tremolite in insulation, which Grace denies. Grace is also facing lawsuits from people who developed asbestos-related illnesses after working with the ore or living near company plants. In Libby, Mont., where Grace mined most of the ore, about 80 people have sued after becoming ill. Grace says it took steps to limit its workers' exposure.

For years, Grace had weathered litigation from the old-style fireproofing laden with asbestos. This spring, with the new court battles over tremolite and a plunging stock price, Grace filed for bankruptcy protection in hopes of forcing plaintiffs and banks alike to stand in line.

The Opportunity

### Capitalizing On Growing Fear

Hardly anyone was worrying about asbestos in 1963 when Grace bought the Libby mine. It produced vermiculite, a handy material that lined pools, insulated attics and loosened garden soil.

Then researchers began making headlines with their growing consensus that asbestos could cause cancer, and by 1970, many cities began restricting its use.

In that climate of fear, Grace saw an opportunity for its reformulated Monokote, which used vermiculite and a cellulose fiber instead of added asbestos. "This is no time to be gentle, timid or really too diplomatic," Grace told its sales force. "You must move quickly."

Monokote did have downsides. The excess settled like powder on steel, was notoriously slippery and could clog the sprayers. But Grace had one overriding pitch: "As you are aware," a 1973 sales letter declared, "Zonolite Monokote types #4 and #5 do not contain asbestos."

About that time, Grace convinced the E.P.A. that the asbestos Monokote did contain was little enough. Grace said it needed as much as 1 percent asbestos to keep its sprayers flowing well, and that the danger of small amounts had not been proved, according to government records. Some in the building industry called the resulting 1 percent threshold "the Grace rule."

The E.P.A. measured asbestos by weight, but the Occupational Safety and Health Administration, which protects workers, used what it felt was a better standard -- the number of fibers released into the air. That is because even tiny amounts by weight could produce many fibers. At the time, OSHA's research branch wanted a limit of 100,000 fibers per cubic meter. A worker typically breathes between four and eight cubic meters of air in an eight-hour day.

But under pressure from Grace and other companies, the agency instead adopted a five-million-fiber limit and lowered it only gradually to the current level of 100,000. At each step, Grace would argue that it was spending millions to clean asbestos from its vermiculite but that the proposed level would either cost too much or be technically impossible.

Initially, Grace argued that there was no health risk in tremolite, whose fibers are shorter and stiffer than those of the common chrysotile asbestos. But the company itself was amassing evidence to the contrary. More than 40 percent of Grace's Montana miners were contracting asbestos-related diseases after 10 years of work, as were 28 percent of its processing workers, company memorandums show.

In 1976, Grace hired a researcher, William E. Smith, to inject hamsters with tremolite

from Libby. One in 10 developed tumors, Grace documents show. Then, Dr. Smith suggested injecting a fresh group with smaller amounts, to test Grace's assertion that a safe level could be found. Grace rejected his proposal, interviews and documents show. "I guess they felt they had the answer," said Dr. Smith, now retired. "The material was carcinogenic."

Grace declined to comment on Dr. Smith's research.

But while Grace never showed that asbestos at some level was safe, government scientists could not pinpoint the level at which it began to cause harm. So the safety agency based its danger estimates -- that 3.4 in 1,000 workers would die at the 100,000-fiber limit -- on mathematical models that extrapolated from known risks at higher levels.

Those estimates had not changed when the safety agency finally adopted the 100,000-fiber limit in 1994. What had changed, former agency scientists say, was the financial equation: with asbestos virtually obsolete, the cost of compliance would no longer exceed the health benefits.

#### The Debate Threat Depends On Who Is Testing

Just how much asbestos Monokote contained became a matter of who was measuring.

The raw vermiculite had as much as 26 percent, according to E.P.A. records, and Monokote was about one-third vermiculite ore. Grace has said that processing removed all but a trace. The company provided laboratory reports showing none or as little as 0.001 percent in Monokote.

Other Grace documents show higher amounts. For example, in 1973, a company research executive pegged the average at 0.2 to 0.5 percent and wrote that samples could go higher because the tremolite was distributed unevenly.

But Grace argued that those counts were deceiving, because much of the tremolite came not in fibers but in chunks, which it believed would not lodge perilously in the lungs. A former Grace scientist, Julie Yang, developed her own way of sorting out the fibers.

"If you look only from the top, it looks like a fiber," she said. But from another angle, what appeared to be a fiber might be the edge of a chunk, she said. Her counts were about half those of other labs, she recalls.

The debate over what constitutes a true fiber continues. At the time, Ms. Yang's methods drew objections from a laboratory co-worker, who protested to a superior, "As you can see by the very low counts, we would not be able to use it to compare ourselves to any outside party."

From time to time, Grace records show, independent laboratories measured as much as 5 percent asbestos. Grace disputed those findings, and while some laboratories stood firm, the company in 1983 forced asbestos experts at the Mount Sinai School of Medicine to recant their finding of 1 percent asbestos in Monokote at the Jacob Javits Convention Center in Manhattan. A television news broadcast of the incident reported that several other Monokote samples were asbestos-free.

When it came to testing the air that workers breathed, Grace had trouble meeting the proposed OSHA limit. In 1977, the only year of that decade cited in a testing summary provided by Grace, Monokote exceeded the 100,000-fiber level at four of five work sites, rising as high as 310,000.

While other company records indicate that levels may have gone even higher, Grace said any count should be viewed as a maximum, since glass and other elements could be mistaken for asbestos.

By the mid-1980's, fiber levels dropped below the proposed cap, as the company improved its methods of purifying the ore, the Grace testing summary shows.

#### The Concerns Weighing Risks And Disclosure

By 1977, Monokote was America's leading fireproofing material. Grace estimates that it was used on 60 percent to 80 percent of the roughly 150,000 steel-frame structures built during the 1970's and 80's.

To Grace's leaders, though, that success seemed increasingly tenuous. They could not prove Monokote was safe. There were the health problems in Libby and concerns about the safety of other vermiculite products. And there were the whispering advertisements.

A competitor, the United States Mineral Products Company, had stayed in the fireproofing business by replacing asbestos with a mineral wool. Now it was running advertisements in a trade magazine asking, "Will your supplier certify his materials are absolutely free of asbestos?"

Grace called top executives together to tackle "the tremolite problem." Some of the confidential records of those meetings, turned up by lawyers suing Grace, were cited in an article on Grace's attic insulation last year in The Boston Globe.

"There was a great deal of contingency planning in case we were forced to shut down by regulatory authorities or due to our compliance problems," recalled a former Grace executive, Elwood S. Wood, who defended his role and the company.

In an 18-page strategy memorandum, he noted that labeling Monokote and other vermiculite products as containing asbestos would severely dampen sales. Then he

looked at the other side of the equation.

"The risk of liability to customers is heightened by the decision not to label our products," he wrote. "Based on advice of corporate counsel, this risk is categorized as moderate. Moreover, it seems unlikely that bona fide cases of personal harm could be well documented considering the pattern of use and exposure levels of our customers."

So, according to company records and interviews with current and former officials, Grace hewed to its policy of nondisclosure, even as it began the search for fireproofing that did not use vermiculite.

Grace decided that it would advise the government of the contamination. It adopted a different stance for the public. For products made entirely of vermiculite, like the attic insulation, builders, laborers and consumers would be told about the tremolite only if they inquired. As for Monokote and other products partly made with vermiculite, employees were to respond that they were "non-asbestos products," documents show.

In one memorandum, a company official labeled the strategy the "Miranda statement," after the Supreme Court ruling requiring that suspects be advised of their rights. Only in this case, Grace was advising its sales crew to remain silent.

A Grace spokesman, William M. Corcoran, declined to comment directly on the strategy. Without specifying when the company began to do so, he said Grace had responded to customer requests by providing laboratory reports that found "trace or lesser amounts of asbestos in the product samples tested." He added, "Thus, the overriding fact remains that the asbestos content of those products is so minuscule that they cannot and do not pose any health risk to anyone." What Grace failed to report to its customers, though, were the tests that had found significantly higher asbestos levels.

Still, word was seeping out, sometimes through safety sheets warning buyers of the pure vermiculite about tremolite contamination. In 1980, the O. M. Scott & Sons Company was using the Libby vermiculite in fertilizer when a number of workers fell ill. The company insisted on switching to vermiculite that Grace mined in South Carolina, which apparently was uncontaminated by tremolite.

Grace itself considered using that ore for a cleaner Monokote when California proposed a strict no-asbestos rule, a company document shows. But the state backed off.

In 1986, the University of Virginia Medical Center stopped using Monokote on a construction project after learning that the asbestos content was "unexpectedly close" to federal limits, university officials said.

When it lost a Seattle contract that called for an asbestos-free spray, Grace did not press the issue. "If Grace pursued legal action in this case, our position that Monokote complies with no-asbestos specifications would certainly come into question," a company lawyer wrote in a confidential memorandum.

Another official wrote at the time, "Don't forget, we will win the war."

But Grace was fighting such battles monthly, former company officials said, and state and federal officials began pushing for disclosure of any amount of a harmful substance.

In 1986, in what appears to be the first such disclosure, Grace mentioned tremolite in safety sheets sent to companies using Monokote.

A year later, Hellmuth, Obata & Kassabaum, now one of the world's largest architecture firms, noticed the change and stopped using Monokote in its projects.

Donald O. Francke, a former vice president at the firm, remembers the sense of betrayal. "When Grace argued that by 'none' it meant 'only a little,' we said to them, 'If that's what you really meant, that's what you should have said,' " he recalled.

In the early 1990's, full disclosure of contaminants became the industry standard. Today, as part of a broad look at the hazards of fibers, the E.P.A. is planning to re-examine its 1 percent threshold for asbestos.

The ramifications of Grace's legal strategy remain to be seen. Grace says it knows of no asbestos-related lawsuits in connection with the reformulated versions of Monokote.

Building owners interviewed for this article were generally unaware of the tremolite issue.

As for the workers, many like Harry Starratt brought legal claims, saying that their lungs had been damaged by the old Monokote spray. Until speaking with a reporter, Mr. Starratt did not even know that the new Monokote also had some asbestos, and he has no way of knowing if it compounded his health problems.

Mark H. White had a special reason to wear only a paper mask on the job in 1975. His father, Kevin White, then Boston's mayor, had banned asbestos sprays. "It burns me that that's the way this company acted," Mark White said.

His risk is probably tiny, since he worked construction for just one summer. But many others used Monokote for years. And since asbestos-related disease takes upwards of 40 years to develop, the clock is still ticking for them, the ones who worked construction only after they thought asbestos was history.

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**GRAPHIC:** Photos: "There was never supposed to be harm in it," says Harry D. Starratt, a retired fireproofing sprayer. (Jared Leeds for The New York Times); Attack and . . . In the advertisement, right, in the January 1977 issue of Walls & Ceilings, an industry rival challenged W. R. Grace's description of Monokote as asbestos-free.; . . . Counterattack Grace criticized the advertising campaign in a memorandum to its employees.; The site in Libby, Mont., where W. R. Grace mined most of the vermiculite that was used in its fireproofing. (Associated Press)(pg. A10)